SRNT 9/9/05

10675207 Measuring Temperature OF ROTATING EQUIPMENT with Sealed Bearings

Type	Ref#	Hits	Search Text	DBs	Time Stamp	Comments
BRS	S90	1	10/675,207	US-PGPUB; USPAT	9/9/05 13:07	Finds US 20040213319 A1 , the PGPUB of the instant application.
IS&R	S91	2210	((374/153) or (374/102) or (374/57) or (374/120) or (374/45) or (374/4) or (374/141)).CCLS.	US-PGPUB; USPAT	9/9/05 13:12	see below.
BRS	S97	52	S91 and @pd > "20050426"	US-PGPUB; USPAT	9/9/05 13:14	browsed

Type	Ref#	Hits	Search Text	DBs	Time Stamp	Comments
IS&R	L3	2210	((374/153) or (374/102) or (374/57) or (374/120) or (374/45) or (374/4) or (374/141)).CCLS.	US-PGPUB; USPAT	9/9/05 20:31	
IS&R	L4	383	((340/589) or (340/682)).CCLS.	US-PGPUB; USPAT	9/9/05 20:31	SEE BELOW
BRS	L5	52	L3 and @pd > "20050426"	US-PGPUB; USPAT	9/9/05 20:31	UPDATED EARLIER
BRS	L6	383	L4 not L5	US-PGPUB; USPAT	9/9/05 20:53	
BRS	L7	4	L6 and @pd > "20050426"	US-PGPUB; USPAT	9/9/05 20:37	browsed for UPDATE
IS&R	L8	681	((384/448) or (384/624)).CCLS.	US-PGPUB; USPAT	9/9/05 20:37	SEE BELOW
IS&R	L10	1845	((73/116) or (73/168)).CCLS.	US-PGPUB; USPAT	9/9/05 20:38	SEE BELOW
IS&R	L12	1007	((702/34) or (702/130) or (702/132) or (702/134)).CCLS.	US-PGPUB; USPAT	9/9/05 20:38	SEE BELOW
BRS	L13	39	L12 and @pd > "20050426"	US-PGPUB; USPAT	9/9/05 20:38	SEE BELOW -- REMOVE DUPLICATES
IS&R	L14	1230	((417/32) or (417/13) or (417/63)).CCLS.	US-PGPUB; USPAT	9/9/05 20:38	SEE BELOW
BRS	L9	19	L8 and @pd > "20050426"	US-PGPUB; USPAT	9/9/05 20:39	BROWSED FOR UPDATE
BRS	L11	39	L10 and @pd > "20050426"	US-PGPUB; USPAT	9/9/05 20:53	BROWSED FOR UPDATE
BRS	L19	35	13 NOT L11 not L8 not L4 not L5	US-PGPUB; USPAT	9/9/05 22:15	BROWSED FOR UPDATE
BRS	L15	18	L14 and @pd > "20050426"	US-PGPUB; USPAT	9/9/05 22:15	BROWSED FOR UPDATE

Type	Ref#	Hits	Search Text	DBs	Time Stamp	Comments
IS&R	L23	25	(277/319).CCLS.	US-PGPUB; USPAT	9/9/05 22:23	SEE NEXT. THERE WERE NO PGPUBS
IS&R	L24	32	**(277/319).CCLS.**	USPAT; USOCR	9/9/05 22:24	BROWSED, TAGGED 3 FOR TEMPERATURE SENSING OF SEALS
IS&R	L25	121	**(277/317).CCLS.**	US-PGPUB; USPAT; USOCR	9/9/05 22:40	BROWSED.
BRS	L29	29	(US-6208953-$ or US-6241383-$ or US-6260004-$ or US-6271761-$ or US-6297742-$ or US-6330525-$ or US-6360616-$ or US-6425293-$ or US-4691276-$ or	USPAT	9/9/05 22:56	see below --tagged as being from an IDS
BRS	L30	5	(US-20050049801-$ or US-20050047692-$).did. or (US-6865513-$ or US-6882961-$ or US-6861836-$).did.	US-PGPUB; USPAT	9/9/05 22:56	Tagged in Update of 26 April 2005 browse
BRS	L31	77	(US-20040218058-$ or US-20020188411-$ or US-20040213319-$ or US-20020186747-$ or US-20040267491-$ or US-20050022589-$ or US-20040190586-$ or US-20030030565-$ or US-	US-PGPUB; USPAT	9/9/05 22:56	see below --Tagged PRIOR TO update AFTER 6 AUG 2005
BRS	L32	98	(US-20040218058-$ or US-20020188411-$ or US-20040213319-$ or US-20020186747-$ or US-20040267491-$ or US-20050022589-$ or US-20040190586-$ or US-20030030565-$ or US-	US-PGPUB; USPAT; DERWENT	9/9/05 22:56	see below --Tagged PRIOR TO update of 9 Sept 2005
BRS	L33	2	(US-6260004-$ or US-6078874-$).did.	USPAT	9/9/05 23:12	HAYS and PIETY Patents used in the FINAL REJECTION.
BRS	L26	10	(US-3809393-$ or US-3892970-$ or US-3929342-$ or US-6312226-$ or US-6499349-$ or US-6078874-$ or US-4885707-$ or US-4800512-$ or US-4773766-$).did. or (WO-9801831-$ or EP-909430-$ or US-	USPAT; DERWENT	9/9/05 22:57	from an 892 -- browsed Seals = Tremoulet
BRS	L38	1	33 and seal$3	USPAT	9/9/05 23:19	HAYS only talks about Seal LEAKAGE.
BRS	L39	18	29 and seal$3	USPAT	9/9/05 23:22	browsed
BRS	L40	9	31 not 29 not 33 not 30 and seal$3	USPAT	9/9/05 23:43	browsed
BRS	L41	2	32 not 31 not 29 not 33 not 30 and seal$3	USPAT	9/9/05 23:49	browsed

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1	☐	US 6626436 B2	US 6626436	US Full	5
2	☐	US 6626436 B2	US 6626436	US Full	1
3	☐	US 6082737 A	US 6082737	US Full	1
4	☐	US 6082737 A	US 6082737	US Full	2
5	☐	US 6082737 A	US 6082737	US Full	3
6	☐	US 6325377 B1	US 6325377	US Full	2
7	☐	US 6325377 B1	US 6325377	US Full	8
8	☐	US 6325377 B1	US 6325377	US Full	1
9	☐	US 6092370 A	US 6092370	US Full	1
10	☐	US 6092370 A	US 6092370	US Full	2
11	☐	US 6092370 A	US 6092370	US Full	8
12	☐	US 5041989 A	US 5041989	US Full	4
13	☐	US 5041989 A	US 5041989	US Full	1
14	☐	US 5533413 A	US 5533413	US Full	1
15	☐	US 6312226 B1	US 6312226	US Full	1

	Comment
1	Monitoring seal system – MOUNTED sensors communicate to a base station (remote)
2	(JOHN adj CRANE).as.
3	(JOHN adj CRANE).as. --- Williamson et al. – Rotary shaft monitoring seal system
4	Fig.1, shows mounted sensor above the seal or bearing
5	(Empty)
6	same
7	(Empty)
8	(JOHN adj CRANE).as. --- Williamson et al.
9	The first temperature sensor may be coupled to the pump head proximate to the seal and the second temperature sensor may be coupled to the pump head at an end-cap housing the outlet chamber. The first and second temperatures measured by the first and second temperature sensors are compared with first and second reference temperatures to determine whether either the inlet check valve, the seal, or the outlet check valve is malfunctioning prior to causing a severe failure of the pump head.
10	In a preferred embodiment of a two-sensor diagnostic system 90, the first temperature sensor 92a is attached to the housing 14 proximate to the plunger seal 50 and the second temperature sensor 92b is attached to the top of the end-cap 12.
11	Seal Temperature
12	Fig. 4 Temperature vs. Time plot
13	KATAOKA ET AL. --- Method and apparatus for observing operating state of mechanical seal
14	Various kinds of sensors SN are provided at suitable locations on each equipment and serve to detect information on stress applied to the diagnosis target equipment. The diagnosis equipment may comprise dynamic equipment, such as valves, pumps, arc, and static equipment, such as heat exchangers, distillation columns, etc. The sensors SN may comprise vibration sensors, temperature sensors, thickness sensors, acoustic emission (AE) sensors, and the like.
15	Alternatively, a temperature transmitting coating such as black oxide can be applied directly to the line shaft immediately adjacent to the stuffing box or mechanical seal. As described above, an infrared sensor is then positioned within sensing range of the collar or coating.

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IPC(7) Classification:	XREF?	CLASS 374:	Consult Diego Gutierrez
	OR	374/153	classified search
	XR	374/102	classified search
		374/57	
		374/120	
	classified search	374/45	
	classified search	374/4	
		374/141	
		[redacted]	
		340/589	
		340/682	
		[redacted]	
		384/448	
		384/624	
		[redacted]	
		73/116	
		73/168	
		[redacted]	
		702/34	
		702/130	
		702/132	
		702/134	
		[redacted]	**PUMPS**
	classified search	417/32	. Responsive to pump or pump fluid temperature
	classified search	417/13	. Responsive to pump lubricant, sealant, or coolant condition
		417/63	**WITH SIGNAL, INDICATOR, OR INSPECTION MEANS**

		[redacted]	**SEALS**

	classified search	277/317	**SEAL COMBINED WITH INDICATOR, SAMPLER, OR INSPECTION FEATURE**
	classified search	277/319	**Fluid temperature**